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AUTHOR Sagaria, Sabato D.
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ABSTRACT

A study examined achievement and attitudes of traditional and nontraditional age students enrolled in an undergraduate behavioral sciences statistics course. Performance and attitude data were collected from a class of 25 traditional students (average age 22) and from a class of 15 nontraditional students (average age 35). The two groups were taught using the same format, textbook, and testing format. Results indicated that nontraditional students performed at a significantly higher level (one letter grade) than traditional students. The nontraditional students were as positive or more positive on all aspects of their college course experience, including attitude toward the professor. Data from the research had a number of implications, including the need to (1) understand the population of students; (2) use the rich and varied knowledge and experiences possessed by adults as ideational anchors; (3) apply appropriate methods and perspectives in teaching each population; (4) recognize that the student and the professor create the "teachable moment"; and (5) appreciate that the different levels of knowledge and experience possessed by the students imply different motivational bases. Findings were in concert with cognitive learning theorists' positions in regard to information processing. (Author/YLB)

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Teaching traditional and non-traditional age individuals: How should methods, expectations, and standards differ?

Sabato D. Sagaria, Ph.D.

Capital University

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Running head: TRADITIONAL AND NON-TRADITIONAL STUDENTS

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Abstract

Achievement and attitudes of traditional and non-traditional age students enrolled in an undergraduate behavioral sciences statistics course are examined. Non-traditional students performed at a significantly higher level (one letter grade) than traditional students. In addition, the non-traditional students were as positive or more positive on all aspects of their college course experiences, including attitude toward the professor. The discussion focuses on the need to: (a) understand the population of students; (b) utilize the rich and varied knowledge and experiences possessed by adults as ideational anchors; (c) apply appropriate methods and perspectives in teaching each population; (d) recognize that the student, together with the professor, create the "teachable moment"; (e) appreciate that the different levels of knowledge and experience possessed by the students imply different motivational bases. Implications and recommendations are discussed within the context of cognitive learning theory perspective.

The National Center for Education Statistics predicts that by 1990 64% of students enrolled in higher education will be older than 25 as compared to 56% in 1980. In 1985, students 25 years and older (non-traditional students) comprised 43% of the total college student population. By 1993, the same group is projected to increase to 49% (Lace, 1986). Because of their age and experience, non-traditional students can pose unique or unexpected demands on higher education institutions that are accustomed to dealing with expectations of students under the age of 25 (traditional students).

Research that addresses implications for teaching traditional and non-traditional students is necessary for the formation and implementation of administrative policy and is essential for the development of faculty members who are accustomed to teaching traditional students but are faced with having to teach both. Administrators and faculty must make decisions about methods of teaching, expectations and standards of excellence, as both groups of students work to meet educational objectives. All too often, research has focused on either the traditional or non-traditional students. What has been missing is a direct comparison of achievement and attitudes of these two populations. This void is one reason for the present research.

The reasons for an increased number of non-traditional students on U.S. campuses, in the majority of the cases, have been linked with career- or work-related concerns (Aslanian and Brickell, 1980), and include such motives as the: (1) growing need for mid-career retraining; (2) economic pressures on women to re-enter the job market; (3) desire of many adults to enhance the quality of their lives through learning; (4) need to acquire professional or work skills for the first time as they find themselves single heads of households (Clayton and Smith, 1987); and (5) achievement motives such as

ego-enhancement, task-orientation and affiliation (Ausubel, 1968). Assessing the future of education in America, we can predict with some certainty that the population of adult learners will continue to grow (Carnegie Council, 1980; NCES, 1985). Verification of this prediction rests with social indicators that point to the aging of the population and an ongoing need to be updated with new knowledge and advanced technologies. Life-long learning is envisioned as the norm, and education, will serve as a continual developmental and adaptation process directed toward meeting leadership responsibilities throughout one's life.

Chickering and Havighurst (1981) have stated that the post-industrial society has shifted the occupational distribution of workers from goods-producing to service-producing jobs. In 1950 about 50% of American workers were producing goods, whereas it is estimated that 70% provide services in the 1980's. Chickering and Havighurst also state that since the service occupations require more formal education than do the goods-producing occupations, we can expect the non-traditional student population to continue to increase and education to be more and more the means of access to status, income, and future opportunity. Furthermore, since 1900 the work-life span has more than doubled. The average life expectancy has increased to 78 years for men and to 83 years for women and two twenty-year careers are now possible for most healthy persons. Thus, increasing numbers of people in their forties and fifties are looking for an education that will train them for new jobs (Chickering & Havighurst, 1981). Hence, the average age of the non-traditional student is steadily increasing. Consequently, the educational experience of individuals needs to go beyond the traditional parameters.

According to Lenz (1982) the substructure of American education has followed the premise that teaching, or pedagogy, is an activity without a feedback loop, a transmission belt that goes one way, reaching an immature and/or uninformed human being, namely a student; that this activity takes place within fixed points of the student's life, normally between the ages of six and twenty-two; that it occurs at certain hours within buildings designed and set aside for the purpose; and that both teacher and student are engaged full time in their respective tasks. This may or may not describe traditional students. We do know, however, that this description does not adequately fit non-traditional students, with their increased motivation, self-awareness, and sense of purpose (Astin, 1975;1985) who bring a new level of experience and maturity to the classroom (Cagiano, Geister, & Wilcox, 1977-1978).

Knowles (1972;1984) has argued that adults feel the need to learn, and that the adult learning environment is characterized by mutual trust and respect, freedom of expression, and acceptance of differences. Above all, the non-traditional student pursues an education because he/she wants to (Lucas, 1986) and not because someone else wants him/her to. According to Knowles, the adult learner perceives the goals of a learning experience as his or her own goals, and accepts a share of responsibility for planning the learning experience, and therefore has a feeling of commitment toward it. The learner participates actively in the learning process and the learning process makes use of the learner's experiences. Consequently, the learner has a sense of progress toward his/her goals. The implications are that learning needs to have a context and needs to be made meaningful (Merrian, 1984; Naylor, 1985; King & Bauer, 1988).

The presence of both traditional and non-traditional students on American campuses dictates the need for colleges and universities to re-evaluate learning processes and environment plus to determine what innovative teaching strategies should be developed to effectively meet educational objectives. This cannot be accomplished without up-to-date reliable and valid data. The present research compared traditional and non-traditional students relative to academic achievement, values and attitudes toward the professor and learning, while they were studying statistics for the behavioral sciences.

It is hypothesized that given the characteristics of traditional and non-traditional students and the same or similar conditions such as environment, course objectives and expectations, non-traditional students will learn more and perform better than traditional students. The argument is based upon the fact that the additional knowledge and motivation possessed by adults provides ideational scaffolding within which new knowledge can be organized (Ausubel, 1968). The learner is believed to rely upon the extensive knowledge he/she already possess when called upon to master a subject matter that most individuals consider to be difficult and abstract. Ausubel (1968) exclaims that we need only to ascertain what the individual already knows and then proceed to teach accordingly. Complementing Ausubel theory is the thesis that education can draw upon interdisciplinary sources of knowledge and a holistic view in human learning (Even, 1981;1987) by relying on the richness of the human experience.

Method

Subjects and design

Performance and attitude data were collected from 25 traditional students who enrolled in a statistics for the behavioral sciences course. These

students met for 50-minute periods three days each week for 15 weeks. The same data were collected from 15 non-traditional students who met for one three-hour session every two weeks over the same semester. In recognition of the fact that adults learn on their own 90% of the time (Tough, 1979;1982; Even, 1987) the non-traditional students were expected to go beyond that which was presented in class, on his/her own. The traditional student received the same presentations as the non-traditional students plus more in-depth presentations and more application problems. Consequently, the self-directedness characteristic associated with this population of students was relied upon. However, students in both groups were governed by the same syllabus and requirements, and were taught by the same instructor. The required text for all students was Statistics for the Behavioral Sciences (Gravatter & Wallneau, 1988). Performance data from four midterm exams were obtained for each student and at the end of the course each student anonymously completed an attitude questionnaire.

The average age of the traditional students was 22 while the average age of the non-traditional students was 35. There were three men in the traditional class and two in the non-traditional class.

Procedures

Topics normally covered in statistics for the behavioral sciences were taught to the two groups using the same format, textbook and testing format. For each topic in the course, a presentation was made separately to each group of students. A "large" number of multiple choice questions, as well as longer problems, that represented different levels of Bloom's (1976) Taxonomy, were assigned to the students to complete on their own. After providing evidence of having solved a given problem, each student was free to receive the keyed

response for that problem, from the instructor. It was announced that for each midterm exam the instructor would randomly pick questions from both subsets of items. The overall arithmetic mean on the four midterm exams determined the individual's letter grade (i.e., A: 90-100, B: 80-89, etc).

Following Lenz's (1982) recommendations, the study/testing procedure was designed so that the examination was part of the learning process, and was not merely a way to assign grades. In addition, the process encouraged self-testing and self-evaluation, and thereby provided a means for the student to control his or her own learning. The course objectives and the students' responsibility were unambiguously presented. Each midterm test was alternately administered, first, to each group. Traditional students knew that the instructor was teaching the non-traditional section of the course, and visa versa. Students in one section did not know students in the other section, nor did they have any opportunity to come in contact with them. The instructor randomly and blindly graded all tests so that at no time was he aware of whose paper was being graded or whether a paper was that of a non-traditional or traditional student.

Results

The overall mean performance data were subjected to a two-group independent t-test analysis, resulting in a statistically significant effect with a t-obtained of 2.047, (df = 38) at the alpha level of 0.05. The non-traditional group performed one letter grade above the traditional group, with overall means of 83.7% and 74.6%, respectively (refer to Figure 1).

Insert Figure 1 about here

The average difference in performance between the two groups over the four tests ranged from a high of 13.7% on the second test to a low of 5.7% on the fourth test. Furthermore, the non-traditional students consistently outperformed the traditional students throughout the semester.

In addition, the non-traditional students were as positive or more positive toward all aspects of the educational experience during the course than the traditional group (refer to Table 1), although statistical significance was not reached at the 0.05 level.

Insert Table 1 about here

It is interesting, however, that the non-traditional students rated the instructor more positive, reported that they liked the format of the course more, invested an increased amount of effort and consequently were more apt to receive the grade they wanted. Additionally, the non-traditional students, more often than the traditional students, felt they gained what they expected to gain from the course, ranked the course more favorably, "above average", and provided a more favorable evaluation of the exams, text, and homework than the traditional students.

Discussion

The findings suggest that the institution's academic standards aught not be compromised as a result of a new student population on U.S. campuses, and that expectations for the non-traditional and traditional student should be equally high. In fact, the findings support the point of view that expectations should be higher for the non-traditional students than the traditional students, thus utilizing the generally higher levels of maturity,

motivation, experience and sense of direction. Rather, students need to be "taught" in ways that recognizes the differences they bring to the learning situation. The marked achievement and attitude differences found in this study underscore the importance of exercising caution in the application of traditional assumptions and practices in the teaching of non-traditional students.

Practical Implications

The data from this research have a number of implications, of which three shall be highlighted. First, the adult student most likely has a full-time job, with numerous responsibilities. Thus, pursuit of a baccalaureate degree simply adds to an already hectic life style. Consequently, the time and energy the individual invests in learning must compete with all the personal, social, family, community, and other tasks, responsibilities and diversions within the student's life. The non-traditional learner is a person who is engaged in learning of his/her own free will. However, we must recognize that learning most likely will take place in different ways than would the learning by traditional students. As Even (1987) explains "...an adult's life contains all that the adult is, has been, and hopes to be as well as all that life means to them." Associated with the extensive experience of adults are numerous learning "baggage barriers" (Even, 1987) that need to be recognixed and overcome.

When the adult student seeks flexibility, he/she is saying, "teach me, challenge me, I want to learn, but please allow me the freedom to schedule and complete the learning tasks within my own harried schedule". The most common remark from the adult students was that the the procedure kept them "on target". The questions highlighted the "important" material. Thus, the

professor's responsibility is to ensure that the domain of knowledge is adequately sampled by the study questions and the questions should represent the levels of learning, as Bloom (1971;1976) outlines that meet the intended objectives. The experimenter prefers to select questions designed to direct the students to go beyond the factual level, and to encourage creative problems solving and critical thinking, (refer to Mayes, 1987 for strategies).

The non-traditional individual has also experienced joy, frustration, satisfaction, anxiety, disappointment, resignations and moments of exhileration, more likely, at a different level than the traditional student. Often non-traditional students bring a high level of sophistication, professionalism and reality to the classroom and the individuals participating in this experiment were no exception. Consequently, the individual comes to the classroom with a great deal of knowledge, a broad range of interests, hopes, and expectations. There usually exists within the non-traditional student high levels of initiative, personal involvement, and pervasiveness. One's motivation to succeed is generally very high. However, because non-traditional students are more likely to have a greater number of responsibilities, they are also more likely to drop out because of the added stress and anxiety brought about by being involved in demanding college courses. As study time increases, the amount of time spent on other activities decreases, and some activities may be dropped completely. Consequently, a common barrier to the non-traditional students' success is the feeling of guilt. The challenge for educators is to be knowledgeable of students' predicaments, recognize potential pitfalls, and help them reduce the stress and anxiety associated with what they consider a college education to

be: a difficult process with difficult course material. This in no way implies standards of excellence aught to be relaxed.

Allowing the students to have a voice in how many exams to have, how much material to cover for each exam, when to have an exam, as well as the type of examination, proved to be successful. Encouraging participation, by giving students a voice in the planning, in effect gave them flexibility and control of their learning. As the attitude questionnaire verified, the anxiety level usually associated with statistics was greatly reduced and thereby increasing the chances of success. The depth to which the material was covered and the amount of material covered during the semester were not compromised.

Second, non-traditional students have a time perspective much more oriented toward improving his or her ability to deal with life problems they are facing. Cross (1981) states that learners are frequently motivated by the pragmatic desire to use or apply their knowledge or skill. The instructor can take advantage of this characteristic by discussing theoretical issues embedded in a variety of applications and relying on having the student to relate new ideas to prior ideas and experience (Even, 1987). Learning that stimulates the use of students' context and experience, has an increased potential to be "meaningful" because of the ideational scaffolding provided by the broad-based knowledge structure (Ausubel, 1968).

A hindrance to the academic progress of the non-traditional student, particularly those who have been out of school for some time, is lack of confidence in their ability to learn and perform as a student. Non-traditional students often worry needlessly that they will not, or cannot, compete with the traditional or "younger" student. The findings from the present study are in concert with other researchers (Knox & Sjogren, 1965;

Lunneborg, Olch & DeWolf, 1974). That is, older undergraduates who return to finish college degrees are not at any overall disadvantage intellectually, compared to the typical freshman.

Providing alternative approaches that help deal with stressful situations is very important, and a support group can be beneficial. The non-traditional students appreciated the efforts of the professor in establishing study/support groups. Such groups are used by the non-traditional students and are reported to work in relieving some of what Even (1987) calls, the learning baggage barriers. The traditional students were reluctant to organize similar support groups as the non-traditional students. The traditional students discussed, on an informal basis, the course and the assignments with other class members, but not to the same extent as did their non-traditional counterparts.

Third, heterogeneous subgroups within the traditional and the non-traditional populations exist, and thus presents a source of complexity with which educators must deal. Teaching special groups requires that attention be paid to the characteristics of those groups. For example, the phenomenal influx of women into the workplace has resulted in a record number of women participating in higher education. In fact, women outnumbered men as students in our colleges and universities for the first time in 1984 (Lace, 1986, pp. 8-11), and the make-up of individuals participating in the present experiment corroborates such a trend.

Unlike many women of today who need preparation for entering or reentering the world of jobs and professions, indications are that tomorrow's women will be more concerned with the issue of whether their working life is in tune with their personal and family goals (Entine, 1978). King and Bauer

(1988) state that "Women often turn to education during transitional times; thus, colleges and universities are given the opportunity to act as catalysts in helping them recognize and develop their leadership skills." The findings from this research leads to the conclusion that women can be expected to respond to the growing emphasis on the family without giving up their career or their crusade for equal rights. Plus, a greater number of women will enter the educational arena for the "love of learning", and the desire to build a more fulfilling personal, and/or professional life, in addition to maintaining a quality family life.

As Rosser (1985) argues, the feminist perspective needs to be integrated into our courses. For example, Walton (1986) contends that in an effective learning environment for women, one could "expect less emphasis on authority and hierarchy and a greater respect by each individual for the ideas of the other; a decrease in adversarial politics and an increase in the consensual basis for policy decisions; an increase in sensitivity to individual human concerns and to individual differences; and a shift from lecture-based to more collaborative learning styles of teaching" (pp. 14-15). Incorporating the feminist perspective will enable women to feel welcomed in our classrooms and will give the opportunity for them to develop the added dimension of personal identity to complement the identity they have with family and the significant person in their lives.

Theoretical Implications

The findings from this experiment are in concert with cognitive learning theorists' position of information processingrelying upon two main ideas. First, by utilizing the knowledge within one's cognitive structure the educator is able to enhance proactive facilitation and second, understanding

one's motives for pursuing his/her education influences the methods used to bring about desired outcomes.

As Ausubel (1968) explains, "A good deal of learning ...occurs incidently without any explicit intention to learn." Consequently, the extensive experience associated with adults implies an increased incidental knowledge base. This incidental knowledge base further implies an increased availability of ideational anchors, which allow new school subject matter knowledge to be viewed in terms that are already familiar to the individual. Appropriate established ideas already available in the individual's own cognitive structure can serve as ideational scaffolding to which potentially meaningful new ideas can be anchored. The less inclusive, more highly differentiated propositions, concepts, and factual data are subsumed under the more inclusive ideas and thereby facilitating anchorage through the processes Piaget calls assimilation and/or accommodation. By building upon ones existing cognitive structure we increase the chances for proactive facilitation

Since much school knowledge cannot be rationalized solely in terms of it being necessary for meeting the demands of daily living, the higher achievements of the non-traditional age students can be partially attributed to the higher levels of the intrinsic and ego-enhancing motives. It is unrealistic to expect that school subjects can be effectively learned and retained until the pupil develops a felt need to acquire knowledge as an end in itself. Knowles (1972;1984) would argue that, in general, the non-traditional student is more actively involved in his/her own learning than the traditional student and consequently the motive to achieve is higher. The findings supports such a position.

Furthermore, the recognition that the primary responsibility for the education is the student's, provides the motives for active participation. While the instructor dispenses his/her responsibilities and presents the potentially meaningful ideas within some specific classroom environment, it is the learner that must articulate and organize these ideas into a personal frame of reference. Active participation mobilizes higher levels of attention, especially when a discrepancy or incongruity exists between existing schemata and new knowledge. Under such conditions, accommodation takes place to reduce dissonance (Festinger, 1958) and thus increases attentive behaviors and consequently motivation.

Complementary and pertinent to this experiment, the non-traditional student may be able to reach higher achievement levels than the traditional student because intrinsic and ego-enhancing motives increasingly tend to dominate the motivational picture with advancing age. The findings from this experiment bears out Cantor's (1953), claim that "...doing without being interested in what one is doing, results in little permanent learning and consequently knowledge is never sufficiently consolidated to form an adequate foundation for sequential and well organized learning". According to Ausubel (1968, p. 367), "...in our utilitarian, competitive and achievement-oriented culture, such extrinsic considerations as ego-enhancement, anxiety-reduction, and career advancement become, with increased age, progressively more significant sources of motivation for school learning." And finally, the non-traditional students possesses higher needs for achievement, allows them to be more persistent (Feather, 1961), learn more effectively (Kight and Sassenrath, 1966), and tend to reach solutions in problem-solving tasks more often than the traditional student.

Explanatory Limitations

The findings must be interpreted within a few cautionary guidelines. First, admittedly using intact classes is troublesome. Evidence collected on other students, not participating in this experiment but who represent the two populations, indicates that non-traditional student perform significantly lower (M=5) than the traditional students (M=15) on the Cooperative Intermediate Algebra Test (ETS, 1988). The data suggests that while non-traditional students perform at a lower level at the beginning, they achieve at a higher level by the end of one semester of instruction. In light of this, the findings may even be more impressive than are reported. The findings may also be explained by the fact that the traditional students' experience is much more recent, more readily available and requires less review. Thus, non-traditional students can, and do, mobilize knowledge to the same levels as the traditional students by undertaking a successful initial review. The non-traditional students' extensive experience (high level of incidental knowledge) and motivation can, and did, bring about significant learning and knowledge structure changes over the younger, traditional students.

Second, other important issues to consider when interpreting these data are the under-representation of men plus the findings are based upon one school subject matter material (statistics). Generalization to male populations and other subject matter is limited. Thus, to evaluate the validity and reliability of these findings, replications and expansion through further research are suggested.

Summary

Non-traditional students outperformed traditional students. The methods used illustrate possibilities. Students arrive at the gates of higher education with differences in knowledge, experience and needs. Methods and perspectives must vary to meet the needs of the audience and objectives.

Education's challenge is to help all learners progress beyond their entry level by applying educational and psychological knowledge in the "teachable moment" to: increase proactive facilitation thereby making use of the existing ideational scaffolding and motives; Promote within individuals a life-long learning orientation; Emphasize the value of knowing and understanding as goals in their own right; Foster the long-term acquisition of meaningful and usable bodies of knowledge; and Tap intrinsic and ego-enhancement motives of learners. Academic standards should not be compromised.

This research directs us to better understand the different populations of students. Specifically, there is a neet to better understand the non-traditional learner for the purpose of administering equally effective teaching methods to the traditional counterpart and thereby achieve equal success. An intriguing idea is to have both traditional and non-traditional students in the same class. Could they, would they, learn from each other?

The question is not whether differences exist between populations of students, but how to understand the differences and to capitalize on them. Thus, this study is a reminder of the social responsibility that education must face as the college population becomes older and more heterogeneous. Colleges and universities must restructure curricula, policies and/or instructional methods to meet the needs of the "new" populations of students.

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Author Notes

Reprints of this article may be obtained from Dr. Sabato D. Sagaria; Capital University; 334 Renner Hall; Columbus, Ohio 43209.

Footnotes

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Figure Caption

Figure 1. Mean student performance scores on the four midterm exams throughout the semester in two separate sections of a statistics for the behavioral sciences course.

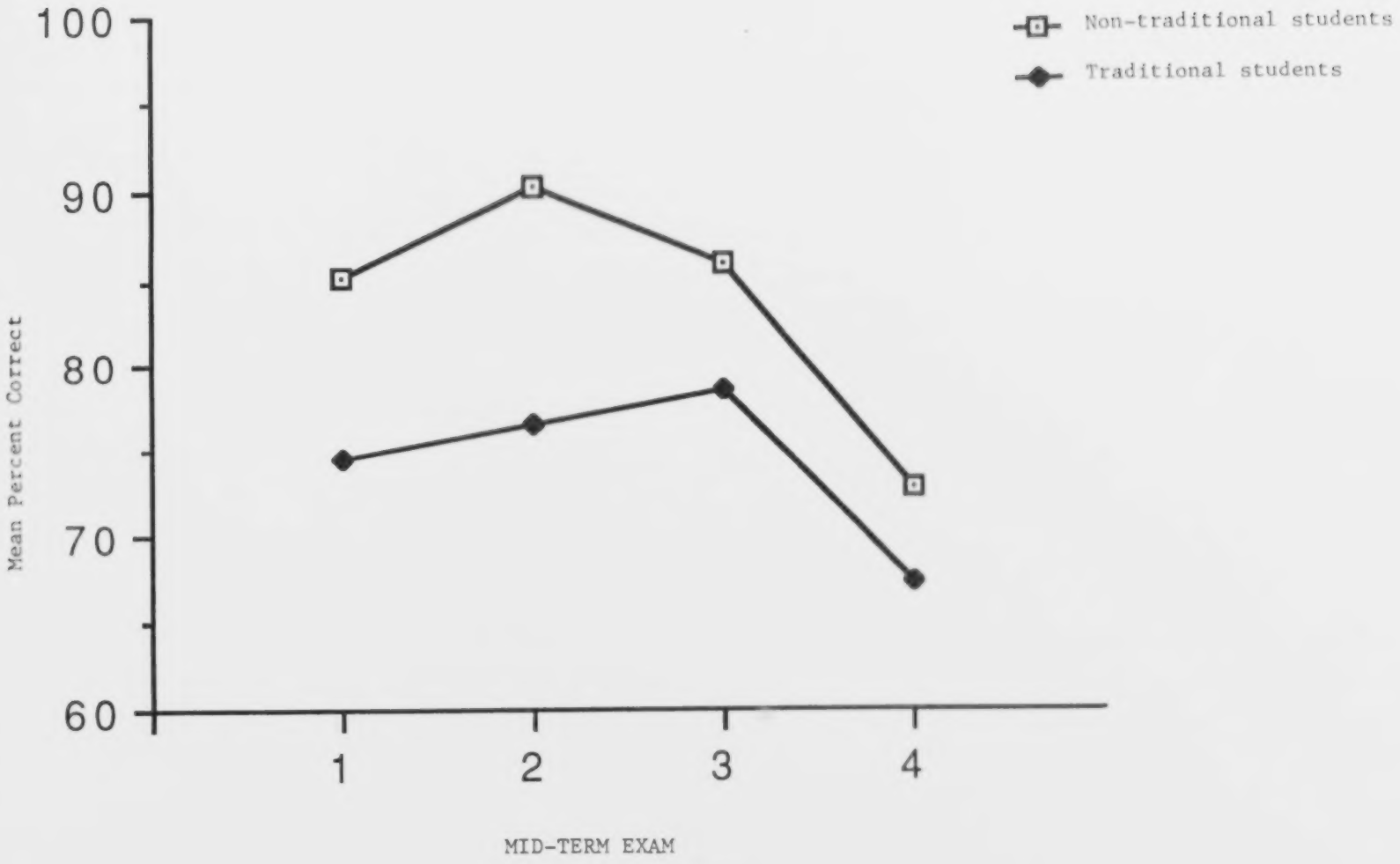
Non-traditional students
Traditional students
100
90
80
70
60
Mean Percent Correct
1
2
3
4
MID-TERM EXAM

Table 1

Attitude questionnaire with mean response pattern for traditional and non-traditional students

Use the same reponse scale for each of the following questions:

1. strongly agree
2. agree
3. neutral or uncertain
4. disagree
5. strongly disagree

	non-traditional age students	traditional age students
1. The instructor explained the course objectively and clearly	1.13	2.12
2. The instructor announced his grading policy at the beginning of the course	1.07	1.36
3. The instructor communicated the subject matter well	1.13	2.28
4. The instructor stimulated interest in the subject matter	1.33	2.16
5. The instructor was willing to answer questions	1.13	1.36
6. The exam questions were worded so as to be easily understood	1.13	1.52
7. The exams were graded fairly	1.13	1.52
8. The exams reflected the content of the course	1.13	1.36
9. The exam questions were of appropriate difficulty	1.20	1.60
10. The exams were of appropriate length	1.77	1.76
11. The text adequately covered topics discussed in class	1.33	1.76
12. The homework was appropriate	1.13	1.84
13. The amount of homework was appropriate	1.33	2.08
14. Given the opportunity I would choose this instructor again	1.00	2.00
15. I would take another course in this area if time permitted	2.80	3.04
16. I see a real need for this type of knowledge in my career	2.13	2.12
17. I would recommend this course to people in my field	1.93	2.16
18. I like the format of this course	1.60	2.28
19. The format of this course allowed me to obtain the grade I wanted	1.93	2.08
20. The grade I received in this course is more important to me than the knowledge	3.60	3.48

The remaining three questions should be answered with the following response scale:

1. well above average
2. above average
3. average
4. below average
5. well below average

21. Compared with the effort I usually put into a course my effort for this course was	1.40	2.72
22. Compared with all the courses I have had in college this was	1.47	2.72
23. Compared with what I expected to get from this course I feel that what I received was	1.60	2.72